# North County Subarea Plan

County of San Diego
Multiple Species Conservation Program

## *Proposed Gap Analysis Approach and Preliminary Results*

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## 1.0 PURPOSE

The purpose of the North County Subarea Plan (NCSAP) gap analysis is to identify areas of high quality habitat or important habitat linkages that would benefit from additional protection and management under the NCSAP. The information derived from the gap analysis will be one of several decision-making tools that will be used during the preserve design phase for the NCSAP.

The basic approach proposed for the NCSAP gap analysis is to overlay of the land management status (based on ownership and stewardship data) with the NCSAP Habitat Evaluation Model Results to identify the gaps in resource protection. This gap analysis is a "coarse filter" approach to identify at a landscape level high value habitat with little or no current natural resource protection or management. Therefore, the areas identified by this approach will be depicted as generalized bubbles, referred to as "key biological resources areas at risk." For each area, the Project Team will summarize the important biological resources and identify appropriate conservation goals. This information will be the framework by which the NCSAP preserve design boundaries (pre-approved mitigation areas) will be drawn

## 2.0 BACKGROUND

The gap analysis approach has been a standard methodology used for the design of regional and statewide preserve systems. In addition, gap analysis has been an important step in smaller, landscape-level conservation planning projects including the San Diego Multiple Species Conservation Program (MSCP) and North County Multiple Habitat Conservation Program (MHCP) plans that were developed for areas adjacent to the NCSAP study area. Although the basic concept is simple and straightforward, there are a number of subtle differences in the definition and application of gap analysis. The application of gap analysis for the NCSAP will likely deviate subtly from previous applications as it is adapted to the unique context of this planning process.

Definitions:

> "**Gap Analysis**... identifies the gaps in representation of biological diversity (biodiversity) in areas managed exclusively or primarily for the long term maintenance of populations of native species and natural ecosystems. Once identified, gaps are filled through new reserve acquisitions or designations, or through changes in management practices. The goal is to ensure that all ecosystems and areas rich in species diversity are represented adequately in biodiversity management areas" (Scott et al. 1993).

"**Gap analysis** is a scientific method for identifying the degree to which native animal species and natural communities are represented in our present-day mix of conservation lands. Those species and communities not adequately represented in the existing network of conservation lands constitute conservation 'gaps'" (Scott and Jennings 1997).

"**GAP Analysis**: Overlay map showing public ownership and dedicated biological open space onto the bio-value map to determine which important biological resources are currently considered 'preserved' on public or private lands. The lands of high biological value which are not on public lands and/or are not protected or managed for biological resources are the 'gaps' in protected habitat. Public lands that are currently managed for biological resources provide opportunities for use as building blocks for a preserve system. Management programs can be developed for public lands that are not currently managed for biological resources to add to the preserve system" (MSCP 1992).

Typical Approach:

A typical gap analysis may be derived from three data layers (Edwards, et al. 1990):

1) Vegetation Distribution – based on satellite imagery, aerial photography, and/or field reconnaissance.

2) Land Ownership – public vs. private ownership.

   *Private lands*: These areas are rarely managed for conservation purposes and therefore seldom require further classification. Exceptions may include lands held by private land conservancies or private lands with conservation easements or deed restrictions that specifically require management for natural resources.

   *Public lands*: These areas are identified by the public agency that administers the land. These agencies often have goals, policies, and directives that dictate the how their lands are managed (on-the-ground management may differ and should be indicated in the database when this knowledge is available).

   It is useful to group the public and private lands into management status classes based on the uses and activities allowed by the public agency or private entity. The Gap Analysis Program (GAP) uses the following management status classes (Edwards, *et al.* 1990):

   *Class 1*: Areas with active management for biodiversity (e.g., USFWS Wildlife Refuges, Nature Conservancy Lands).

*Class 2*: Areas generally maintained for their natural values, but are affected by uses within or outside the boundaries that influence the quality of the resources (e.g., wilderness areas, smaller parcels under conservation easements).

*Class 3*: Multi-use lands. These areas have maintenance of natural value as one of their objectives, but other competing goals affect the quality of the protected resources (e.g., Forest Service lands, BLM lands, state parks, private lands with deed restrictions).

*Class 4*: Lands used primarily for human activity (e.g., urban, residential, active recreation [OHV parks], agriculture).

3) Predicted Animal Distribution – GAP uses Wildlife-Habitat Relations (WHR) modeling to generate the predicted distribution of wildlife based on the known distribution of vegetation communities and the known habitat associations of animal species.

Combining these three layers geographically represents of the distribution of animal biodiversity and land management which facilitates identification of the gaps in resource protection. Conservation efforts can then be focused on "filling" the gaps during preserve design and conservation plan implementation.

## 3.0 PROPOSED NORTH COUNTY MSCP GAP ANALYSIS METHODS

The data layers and process described above was initially developed for large regional and state level gap analyses. The gap analysis for the NCSAP, however, will be conducted at a more detailed landscape scale. Therefore, the proposed gap analysis process has been modified to accommodate the landscape scale of the subarea plan study area. The methods described below were developed for the purpose of identifying at a landscape scale the locations of the areas with key biological resources at risk in the study area. Biological resources include sensitive plants and animals and the habitats and habitat linkages necessary to support maintenance of viable populations of these sensitive species within the NCSAP area.

### 3.1 Habitat Value

A habitat evaluation model (HEM) has been developed for the NCSAP that incorporates vegetation data, predicted animal distributions, and a number of other factors to produce a composite habitat value map. The composite habitat value map ranks habitats as Very High, High, Moderate, or Low value based on the combination of five individual components (see the description of the Habitat Evaluation Model for details). The distribution of habitat value across the study area will provide the biological resource information for determining where the gaps in protection and management occur.

## 3.2 Land Management Status

Land management status will be inferred from the generalized land ownership data layer (Source: SANDAG, revised by San Diego County DPLU 2000). Parcels in the ownership layer will be labeled as public or public, and then further subdivided as described below.

*Public Land*: These parcels will be labeled in the ownership layer by their administering agency (e.g., USFS, BLM, State Parks and Recreation). Land management status for these lands will be assigned based on management class associations developed by Edwards et al. (1990) and will be based on: (1) the goals and objectives of the administering agency, and (2) the current uses and management of each parcel. The County DPLU has circulated a questionnaire to the public lands management agencies to determine current use and management. In addition, all public parcels will be reviewed by experienced county staff, AMEC staff, and outside technical advisors to ensure proper classification. Tribal lands will be excluded from the study area because the county has no jurisdictional authority over them. However, because these lands do contain habitat that may contribute to regional biological functionality, they will continue to be considered in the regional context of preserve design and landscape connectivity. For certain large parcels owned and managed by the same public agency but have distinct areas with different land use designations and management guidelines, it may be necessary to divide the parcel into several areas to allow for multiple management status classes.

*Private Land*: These parcels will not classified into management status classes unless they are specifically managed for conservation purposes (e.g., private conservancy lands). Instead, private lands will be shown as 'Private' without an associated management status class based on the assumption that all the unclassified private parcels provide little or no protection for biological resources and thus represent gaps in resource management.

## 3.3 Regional Preserve Network Considerations

The regional context of the NCSAP and the way it fits into the matrix of other NCCP subregions will also be an important consideration. All adjacent planning areas, land uses, and other 'preserve' areas will be mapped in order to visualize the connectedness of the regional preserve network. The adjacent planning areas included:

- *Multiple Species Conservation Program (MSCP)* – the incorporated and county lands of southwestern San Diego County.

- *Multiple Habitat Conservation Program (MHCP)* – the seven coastal cities of north San Diego County.

- *Camp Pendleton* – large areas of native habitat in the northwest region of San Diego County.

- *Western Riverside Multiple Species Habitat Conservation Plan (MSHCP)* – the entire western Riverside County on San Diego County's northern border.

- *East San Diego County* – National Forest and BLM lands.

These adjacent areas play an important role in the interpretation of the results. The development of preserve building blocks relies, in part, on the existence of adjacent preserve configurations.

### 3.4 Gap Identification

Gaps in protection of biological resources will be identified as generalized bubbles. Bubbles with predominantly Very High and High habitat value on private land or public land with Management Class 3 or 4 will be considered most at risk. Areas with Very High and High habitat value that occur on public or private land assigned a Management Class of 1 or 2 will be considered sufficiently protected and may be used as building blocks during the preserve design phase of the planning process. Each gap bubble will be uniquely identified and described in terms of appropriate place name and biological resources occurring within the bubble. Conservation goals will be developed for each gap bubble that will be used to guide preserve design in the bubble and in adjacent areas. GIS data layers (i.e., vegetation, topography, aerial photos, species point data) and the HEM results will be used to identify the resources. AMEC biologists, County staff, and other local experts will be consulted to compile information on the resources occurring in the vicinity of the bubbles. The conservation goals will be developed emphasizing the biological value and preserve design and function of each gap bubble relative to its specific biogeographic/preserve design context.

In addition to identifying large areas that represent gaps, the gap analysis will assist in the identification of important habitat linkages that may not be adequately preserved. Potential linkages between surrounding areas and the study area will be depicted graphically as large arrows. The purpose of these conceptual linkages will be to focus the future planning and design efforts on areas of potential importance to regional habitat connectivity.

## 4.0 PRELIMINARY RESULTS

The Project Team has prepared a preliminary version of the NCSAP gap analysis to test out the methodology. Further input and review by local biologist and wildlife agencies is required. The preliminary results are represented in the following figures and table:

## 5.0 REFERENCES

Edwards, T., M. Scott, and H. Collin. 1990. Introduction to Gap Analysis in Biodiversity. *http://www.gap.uidaho.edu.*

Multiple Species Conservation Program (MSCP). 1992. Issue Paper #5. City of San Diego.

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Scott, J. M. and M. D. Jennings 1997. "A Description of the National Gap Analysis Program". - The official description of the National Gap Analysis Program. *http://www.gap.uidaho.edu.*

## Table 1
## SUMMARY OF KEY BIOLOGICAL RESOURCE AREAS AT RISK

| Name | Conservation Goals | Biological Resources | Notes |
|---|---|---|---|
| **A – De Luz** | 1) Maintain functional corridor between resources in Riverside County and Camp Pendleton<br>2) Provide buffer for tributaries to the Santa Margarita River<br>3) Provide buffer to protect the important natural resource within Camp Pendleton | • Mosaic of riparian, woodland, CSS, and chaparral<br>• AST ??<br>• LBV<br>• High species diversity<br>• California walnut (*J. californica*) | - *Small individual property owners.*<br>- *Downstream of last known population of red-legged frog in the region (Santa Rosa Plateau)* |
| **B – Santa Margarita River Mgmt. Area** | 1) Provide Protection for the Santa Margarita River watershed<br>2) Provide a buffer to maintain habitat and water quality<br>3) Maintain important wildlife movement corridor<br>4) Link to offsite resources at Camp Pendleton<br>5) Establish connection between Fallbrook property and BLM land | • Mature Riparian forest<br>• LBV<br>• AST<br>• SWF | - *Fallbrook PUD*<br>- *Cooperative agreement with TNC as a mitigation bank* |
| **C – West Rainbow** | 1) Maintain important wildlife movement corridor<br>2) Link offsite potential preserve in Riverside County<br>3) Buffer watershed to maintain water quality | • Large patches of CSS<br>• Mature riparian forest | - *Look at Rainbow Creek for potential corridor beneath I-15* |

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| Name | Conservation Goals | Biological Resources | Notes |
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| **D – I-15 Stepping Stone Corridor** | 1) Provide north-south stepping-stone corridor for birds through study area<br>2) Link patches of habitat into functional units (C, D, E, G, and H)<br>3) Contribute to the regional conservation of CAGN by preserving areas deemed critical by the USFWS<br>4) Identify potential under/over-crossings for I-15? | • CSS<br>• CAGN<br>• Mountain lion, deer movement | - *Look at Moosa Canyon underpass of I-15*<br>- *Need to identify undercrossings of I-15*<br>- |
| **E – Gregory Canyon/ Lancaster Mountain** | 1) Provide core habitat patch<br>2) Buffer San Luis Rey River<br>3) Protect gabbro soils?<br>4) Protect golden eagle nest site(s) | • Large patches of CSS<br>• LBV and SWF in tributaries of San Luis Rey<br>• Golden eagles-north and south of SLR<br>• Gabbro soils-potential plant associates | - *Lancaster Mountain Mitigation Bank*<br>- *Landfill* |
| **F – Magee Ridge** | 1) Provide transitional foothill habitat<br>2) Linkage to potential preserve area in Riverside County<br>3) Provide link between Mt. Olympus (Co.) and Forest Service land | • Known mountain lion movement corridor (Beier 2000)<br>• Gabbro soils – sensitive plant species<br>• Primarily chaparral with woodlands and grasslands | - *Conceptual Area Plan (CAPP) for Mt. Olympus* |
| **G – San Luis Rey Riparian Corridor** | 1) Maintain functional wildlife corridor which traverses entire study area<br>2) Link/connect adjacent habitat patches<br>3) Provide adequate buffer to the riparian corridor for habitat and water quality purposes | • AST<br>• LBV<br>• SWF<br>• Steelhead trout (?)<br>• Mature riparian forest<br>• Major watercourse of North County | - *Caltrans Hwy 76 construction*<br>- *Bonsall River Park group*<br>- *Sand/Gravel Mining*<br>- *Indian Gaming* |

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**SUMMARY OF KEY BIOLOGICAL RESOURCE AREAS AT RISK**

| Name | Conservation Goals | Biological Resources | Notes |
|---|---|---|---|
| **H – Keys Canyon** | 1) Provide primary valley corridor linking foothill open space to the downstream reach of the San Luis Rey River<br>2) Buffer watershed to maintain water quality | • Mosaic of riparian, grassland, CSS, chaparral, and woodland<br>• AST | - *It would be preferable to extend this polygon east through Valley Center to link eastern core areas*<br>- *Highly constrained, fragmented as the corridor extends east* |
| **I – Palomar Mountain Foothills** | 1) Provide transitional habitat from valley to mountainous forests lands<br>2) Complete the linkage through the foothills from Angel Mountain and Rancho Cuca to the San Luis Rey floodplain east of Pala | • CSS, grasslands, and riparian<br>• Tributaries to the San Luis Rey River (potential Steelhead habitat)<br>• Native trout population to the north<br>• CA red-legged frog, newt (?) | - |
| **J – Rancho Cuca** | 1) Maintain large contiguous roadless areas (core areas)<br>2) Provide foothill transition to forest lands | • Oak woodland/grassland mosaic<br>• Chaparral<br>• Montane coniferous forest<br>• Raptor foraging habitat<br>• Mountain lion, deer<br>• Engelmann oak | - |
| **K – Pine Mountain** | 1) Maintain large contiguous roadless areas (core areas)<br>2) Provide foothill transition to forest lands | • Oak woodland/grassland mosaic<br>• Raptor foraging habitat<br>• Mountain lion, deer<br>• Engelmann oak | - *Combination of Angel Mountain area with Guejito Ranch grasslands will create thousand+ acres of contiguous habitat.*<br>- *Important archaeological sites?* |

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| Name | Conservation Goals | Biological Resources | Notes |
|---|---|---|---|
| **L – Hellhole Canyon** | 1) Provide transitional habitat from valley to foothills (PineMountain area)<br>2) Buffer existing wilderness area | • CAGN<br>• AST<br>• LBV<br>• SWF | - |
| **M – Guejito Ranch Grasslands** | 1) Large contiguous block of grassland/oak woodland (core area)<br>2) Provide foothill transition to forest lands<br>3) Preserve major component of the San Dieguito River watershed and maintain water quality | • Oak woodland/grasslands<br>• SKR<br>• GHS<br>• AST<br>• LBV<br>• SWF<br>• Raptor foraging habitat<br>• Core area for mtn. lion and deer<br>• Engelmann oak | - *Important archaeological sites?*<br>- *Single large landowner, not interested in sale?* |
| **N – Lake Wohlford North** | 1) Provide connectedness between several MHCP preserve areas<br>2) Buffer the watershed of Lake Wohlford and Escondido Creek<br>3) Establish a small core area south of Valley Center (important for the intravalley corridors) | • High quality, diverse habitat<br>• Mosaic of CSS, oak woodland, grassland, and chaparral<br>• Engelmann and coast live oak | - |
| **O – San Marcos Mountain** | 1) Provide southern connection to the I-15 "stepping stone"<br>2) Provide linkage to Daley Ranch in north Escondido | • Large contiguous block of chaparral<br>• Gabbro soils | - |

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|---|---|---|---|
| **P – Merriam Mountains** | 1) Provide southern connection to the I-15 "stepping stone"<br>2) P and O combined form southern corridor to the San Luis Rey corridor<br>3) Linkage between habitat east of I-15 and CSS east of Vista | • Large contiguous block of chaparral<br>• Golden eagle nest site<br>• Steep slopes | - |
| **Q – Rancho Santa Fe Corridor** | 1) Buffer Escondido Creek<br>2) Provide conservation of CSS as habitat for CAGN, which is essential for the conservation goals established by the MHCP<br>3) Provide linkage between established preserves around Lake Hodges and hardline areas of MHCP (San Marcos, Encinitas, Carlsbad) | • Largest intact piece of CSS in coastal north county<br>• CAGN core population area<br>• Pond turtles in Escondido Creek<br>• *Baccharis vanessae, Ceanothus verrucosus* | - *Recent burn: Harmony Grove Fire*<br>- *Ongoing acquisition by MHCP cities*<br>- *CAPP (CDFG)* |
| **R – Escondido Creek** | 1) Provide buffer to Escondido Creek | • Riparian habitat<br>• Light-footed clapper rail (near coast)<br>• LBV | - *Ongoing County Parks acquisition efforts*<br>- *CAPP* |
| **S – Ramona Grasslands** | 1) Link offsite MSCP preserves east of Poway to offsite preserves along San Dieguito River<br>2) Protect raptor foraging habitat<br>3) Maintain high quality SKR habitat<br>4) Protect vernal pool watersheds | • SKR<br>• VPs<br>• VP invertebrates<br>• GHS<br>• AST (Santa Maria Creek)<br>• Contiguous area of grassland<br>• Raptor foraging habitat<br>• Rare plants<br>• BUOW | - *Ramona grassland preservation group*<br>- *County directive to acquire land*<br>- *Hardy Ranch: VP ban*<br>- *Effluent sprayfields (Ramona Water District)*<br>- *Specific Planning Areas (County GP*<br>- *Grazing management* |

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| Name | Conservation Goals | Biological Resources | Notes |
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| **T – Ramona Vernal Pools** | 1) Establish network of small preserves within this urban setting that protects the functionality of the pools<br>2) Incorporate as much of the watershed as possible<br>3) Establish guidelines for adjacent land uses<br>4) Maintain water quality | • Vernal Pools<br>• VP invertebrates | - *Ongoing discussions*<br>- *FWS data on VPs* |
| **U – East Ramona Transition** | 1) Link offsite forest service lands<br>2) Provide watershed protection for Sutherland Reservoir<br>3) Provide potential SKR linkage between populations | • Mosaic of chaparral, woodland, CSS, and grasslands<br>• Raptor foraging habitat | - *Need to study SKR occupancy and potential for dispersal between L. Henshaw and Ramona* |
| **V – Lake Wohlford South** | 1) Provide adjacent preserve area to the MSCP PAMA and MHCP preserve<br>2) Provide protection for the habitat south of Lake Wohlford | • Primarily chaparral/woodland mix | - |